

Appl. No. 09/849,049
Amdt. Dated December 12, 2005
Reply to Office action of Sep. 4, 2003

REMARKS

Claims 1-17 are pending in this application after amendments. Claims 1-16 have been amended to particularly point out and distinctly claim the disclosed invention. The amendments are supported by the whole specification. No new matter has been added.

Claim 17 has been amended to incorporate the subject matter of the originally filed Claim 18 to put into allowable form as suggested by the Examiner. Thus, Claim 17 is allowable now.

Specifications

The Examiner raises three issues about the Specification.

1. The Examiner deems that the Specification fails to disclose how the carrier supports 37, 38 are able to position the substrate/wafer vertically. See page 11, lines 5-25. After carefully review of the objection, the Specification and Claim 4, Applicant respectfully submits that the confusion may arise from the mistakes made in Claim 4 which claims "vertically positioning a substrate/wafer." In fact, the Specification discloses the carrier supports 37 and 38 comprise a housing 79 which is "adapted to provide a Z-motion to the substrate carrier." See, page 14, lines 3-8. As seen below, Claim 4 has been amended to correct this mistake.

2. The Examiner points out the informality on page 11, line 29 for missing "substrate carrier" before "42". Applicant is grateful to the Examiner's critical review of the Specification. Appropriate correction has been submitted herein.

3. The Examiner objects the Abstract section for informalities. A new Abstract section is provided herein.

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In summary, Applicant has amended the Specification in accordance with the Examiner's objections. No new matter has been added.

Objections to Claims

The Examiner objects to Claim 1 for informalities. Claim 1 has been amended. Applicant respectfully request that the object to Claim 1 be withdrawn.

Rejection to Claim 4 under 35 USC 112, first paragraph

The Examiner rejects Claim 4 under 35 USC 112, first paragraph for not failing to teach how the substrate/wafer is vertically positioned on the substrate carrier. Claim 4 has been amended to "vertically positioning substrate carriers." The amendment is supported the disclosure on page 14, lines 3-8. Applicant respectfully submits that the amendment overcomes the rejection. Therefore, the rejection to Claim 4 should be withdrawn.

In addition, while Claim 4 is not rejected under 35 USC 102 or 103, for expedience of examination, Applicant assumes that the Examiner would reject Claim 4 over US '540 in view of US '491 if it is not indefinite. As discussed below, Claim 1 is patentable over US '540 in view of US '491. Therefore, Applicant respectfully submits that Claim 4 as amended is patentable over US '540 in view of US '491.

Rejections to Claims 1-7 and 10-11 under 35 USC 112, second paragraph

The Examiner rejects Claims 1-7 and 10-11 under 35 USC 112, second paragraph, as being indefinite for unclear languages or lack of antecedent bases for "the movable frame". Appropriate amendments have been made to Claims 1-7 and 10-11. Applicant respectfully submits

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that the amendments overcome the rejections. Therefore, the rejections to Claims 1-7 and 10-11 should be withdrawn.

Rejection to Claim 1 under 35 USC 102(b) by US '540

The Examiner rejects Claim 1 under 35 USC 102(b) as being anticipated by Ono, U.S. Pat. 4,688,540 (US '540). Applicant respectfully submits that Claim 1 is not anticipated by US '540 for the following reasons.

The claimed subject matter in Claim 1 as amended is directed to a cutting system for use in singulation of substrates and dicing of wafers. The system comprises a first and a second linear transport means arranged parallel to each other; wherein the first transport means comprises a first linear actuator and a first carrier support moveable by the first linear actuator; wherein the second transport means comprises a second linear actuator and a second carrier support moveable by the second linear actuator; and wherein each of the first and second linear transport means has three sequential points serving as a load/unload station, a vision position station, and a singulation/cutting station for the first carrier support and the second carrier support; means for positioning the first carrier support and the second carrier support sequentially from the load/unload station to the vision position station and then to the singulation/cutting station; wherein the first carrier support and the second carrier support reciprocally move in an X-axis direction from and to the singulation/cutting station; and singulation/cutting means for separating semiconductor type substrates/wafer devices one from another by cutting the substrate/wafer as it passes in both X directions; wherein the substrate/wafer is mounted on the carrier supports; and wherein the cutting of the substrate/wafer on the first/second carrier support on the first/second linear transport means may be done when the loading/unloading and positioning the substrate/wafer on the second/first

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carrier support ready for cutting on the second/first second linear transport means. Simply put, the cutting system as claimed in Claim 1 provides two separate transport means on which two carrier supports move the substrate from the loading/unloading station, to the vision/alignment station, to the cutting station, and then back to the loading/unloading station reciprocally, so that the cutting time is minimized. This feature is not disclosed by US '540.

US '540 discloses a dicing machine comprises a cutting station, two alignment station, wherein the cutting station is arranged in the middle of the alignment stations. The alignment stations also serve as loading/unloading station. See, col. 4, lines 7-18, and FIG. 1. In its operation, one wafer transferring means moves on one side of the cutting station from one alignment station to the cutting station while the other wafer transferring means moves on the other side of the cutting station from the other alignment station to the cutting station. It is apparent that this configuration reduces the cutting time in comparison with other systems having only one alignment station, one cutting station, and one substrate transport means. However, as discussed above, the cutting system of Claim 1 employs only one loading/unloading station for both carrier supports, and the cutting time is reduced by moving two carrier supports sequentially along the three stations (vision, loading/unloading, and cutting). Applicant respectfully submits that the dicing machine disclosed in US '540 is fundamentally different from the cutting system claimed in Claim 1 of the present application. Therefore, Applicant requests that the rejection to Claim 1 under 102(b) be withdrawn.

Rejection to Claims 2-3 under 35 USC 103(a) over US '540

The Examiner rejects Claims 2-3 under 35 USC 103(a) as being unpatentable over US '540. Applicant respectfully submits that the currently amended Claims 2-3 are not unpatentable over US '540 for the following reasons.

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As afore-discussed, the cutting system claimed in Claim 1 is very different from the dicing machine disclosed in US '540. The claimed features are not taught or suggested by US '540. Applicant respectfully submits that Claim 1 is not unpatentable over US '540. Because Claims 2-3 are dependent upon Claim 1, Claims 2-3 should be patentable over US '540. Therefore, Applicant requests that the rejections to Claims 2 and 3 under 103(a) be withdrawn.

Rejection to Claims 5-17 under 35 USC 103(a) over US '540 in View of US '491

The Examiner rejects Claims 5-17 under 35 USC 103(a) as being unpatentable over US '540 in view of Carter, US Pat. 5,249,491 (US '491). Applicant respectfully submits that the currently amended Claims 5-16 are not unpatentable over US '540 in view of US '491 for the following reasons.

Claim 17 has been amended to incorporating the subject matter in the originally filed Claim 18 which is allowed. Thus, Claim 17 as amended is allowable.

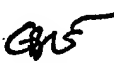
US '491 discloses a sawmill with movable scanning means. In its operation, a flitch or cant is successively transported by a pair of differentially operated clamps, first to a scanning station, and then to a sawing station where the wane is removed. A series of flitches is processed in this manner such that as the wane edge from a first flitch is sawn, a next flitch in succession is optically scanned. See, Abstract, lines 1-6. As discussed above, the claimed subject matter in Claim 1 is directed to a cutting system by which the cutting time is reduced by moving two carrier supports sequentially along the three stations (vision, loading/unloading, and cutting). Even if US '540 and US '491 are non-permissibly combined, they fail to teach or suggest this feature in Claim 1. Because Claims 5-16 are dependent upon Claim 1, Applicant respectfully submits that Claims 5-16 should be patentable over US '540

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in view of US '491. Therefore, Applicant requests that the rejections to
Claims 5-17 under 103(a) be withdrawn.

In summary, Claims 1-17 are novel and non-obvious in view
of the cited prior arts. Applicant respectfully requests that a timely
Notice of Allowance be issued in this case.

Respectfully submitted,

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